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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,855	02/02/2006	Dirk Cnockaert	016782-0344	6433
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EXAMINER				
BERMAN, JASON				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/562,855

**Applicant(s)**

CNOCKAERT ET AL.

**Examiner**

Jason M. Berman

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 14-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of the Claims***

Claims 14-30 are pending in the current application.

### ***Status of the Rejections***

All rejections from the previous office action are withdrawn in view of Applicant's amendment. New grounds of rejection under 35 U.S.C. 103(a) are necessitated by the amendment.

### ***Response to Amendment***

Applicant's amendment of 3/10/2009 does not render the application allowable.

### ***Claim Rejections - 35 USC § 103***

1. Claims 14, 16, 21-23, 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickey in view of Hartig (US 5,262,032).

As to claim 14, Dickey discloses a target assembly comprising:

- A rotatable target tube and a central body (abstract: rotating cylindrical sputtering cathode); and
- Inside the tube a bearing system for rotatably supporting the tube by the body (col 8 lines 40-45: bearing 178 for tube 130; figure 4), and a rotatable vacuum seal for enabling a vacuum in the tube (col 8 lines 42-43: cathode body sealed by plugs 160 and 162; figure 5: sealing cap 214).

Dickey is silent as to a rotatable coolant seal for supplying or extracting coolant.

Hartig discloses a rotating cylindrical target in which coolant is provided to the structure (abstract). Hartig also discloses a rotatable coolant seal to provide the coolant to the structure (figure 8: passage 61 to seal passageway from wall to rotating target tube).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a rotatable coolant seal within the tube, as disclosed by Hartig, in the apparatus of Dickey, because this allows for the supply of coolant while maintaining a vacuum.

As to claim 16, Dickey discloses a drive means for rotating the tube relative to the body interior to the tube (col 8 lines 45-46: drive spindle 170; figure 4).

As to claim 21, Dickey discloses a sputtering apparatus within walls of an evacuable chamber comprising a first and second coupling means connected to the chamber walls for removably coupling the body to the first and second coupling means (figure 4: showing end blocks 114 and 116 connected to chamber wall 110 with fluid and electrical couplings 126 and 154).

As to claim 22, Dickey discloses a sputtering apparatus positioned within the walls of an evacuable chamber comprising a target assembly with one coupling means connected to the walls for removably coupling the body to the coupling means (figures 2 and 3: showing cylindrical cathode and target connected to wall through screw 49).

As to claim 23, Dickey discloses a target assembly comprising:

- A rotatable target tube and first and second central body (figure 5: cathode 190 with magnet array 208 and cooling tube 210); and

- Inside the tube a bearing system for rotatably supporting the tube by the body (col 8 lines 40-45: bearing 178 for tube 130; figure 4) and a rotatable vacuum seal for enabling a vacuum in the tube (col 8 lines 42-43: cathode body sealed by plugs 160 and 162; figure 5: sealing cap 214).

As to claim 25, Dickey discloses a drive means for rotating the tube relative to the body (col 8 lines 45-46: drive spindle 170; figure 4),

As to claim 26, Dickey discloses the first and second body coupled to one another (figure 4: showing bracket 134 for connected magnet to tube 130; col 8 lines 32-34).

As to claim 27 and 29, Dickey discloses a sputtering apparatus within walls of an evacuable chamber comprising a first and second coupling means connected to the chamber walls for removably coupling the body to the first and second body to first and second coupling means (figure 4: showing end blocks 114 and 116 connected to chamber wall 110 with fluid and electrical couplings 126 and 154).

As to claim 28 and 30, Dickey discloses a sputtering apparatus positioned within the walls of an evacuable chamber comprising a target assembly with one coupling means connected to the walls for removably coupling the first body to the coupling means (figures 2 and 3: showing cylindrical cathode and target connected to wall through screw 49).

2. Claims 15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickey in view of Hartig, as applied to claims 14 and 23 above, and further in view of Stuart (US 4,824,540).

As to claims 15 and 24, Dickey and Hartig are silent as to an electrical contact for rotatably connecting the body with the tube, said contact being within the tube.

Stuart discloses a cylindrical magnetron sputtering apparatus in which electromagnets are used within the cylindrical cathode target (abstract; figure 1).

Stuart also discloses the use of electrical contacts between the electromagnetic core and cathode target so only a single power source is required to power both (figure 1: showing electrical contacts 32a-d).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide electrical contacts between the tube and central body, as disclosed by Stuart, in the rotating magnetron apparatus of Dickey in view of Hartig, because this allows for the use of electromagnets using the a single power source.

3. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickey in view of Hartig, as applied to claim 16 above, and further in view of De Bosscher (US 6,375,814).

As to claims 17-19, Dickey and Hartig are silent as to the drive means being an electric or hydraulic motor.

De Bosscher discloses a magnetron sputtering apparatus in which the cylindrical target is rotated (abstract). De Bosscher also discloses that it is well known in the sputtering art to use a standard electric or hydraulic motor to perform this rotation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an electrical or hydraulic motor, as disclosed by De Bosscher in the apparatus of Dickey in view of Hartig, because these motors are known

as standard devices to cause rotation. Additionally, it would have been obvious to one of ordinary skill in the art at the time of the invention to place the motors within the cylindrical target tube because the rearrangement of parts is within the purview of one of ordinary skill. The placement of the motor within the tube would reduce the sputtering chamber size and cost.

4. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dickey in view of Hartig and De Bosscher, as applied to claim 19 above, and further in view of Miyajima (JP 59215484).

As to claim 20, De Bosscher discloses the use of a hydraulic motor to rotate the sputtering target, as discussed above, but is silent as to the use of coolant to drive the motor.

Miyajima discloses a sputtering device in which the coolant's pressure is used as a driving device for causing rotation (English translation abstract). This use of the coolant's pressure is disclosed as increasing the efficiency of the device (English translation abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to drive the motor with the coolant's pressure, as disclosed by Miyajima, in the apparatus of Dickey in view of Hartig and De Bosscher, because use of the coolant's pressure as a driving power increases the efficiency of the device.

***Response to Arguments***

5. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection. New rejections have been made in view of Applicant's cancellation of claims 1-13 and entering of new claims 14-30.

***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Berman whose telephone number is (571)270-5265. The examiner can normally be reached on M-R 8am-5pm EST.



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571)272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nam X Nguyen/  
Supervisory Patent Examiner, Art Unit 1753

/J. M. B./  
Examiner, Art Unit 1795  
7/8/2009